

- (54) Printing machine**

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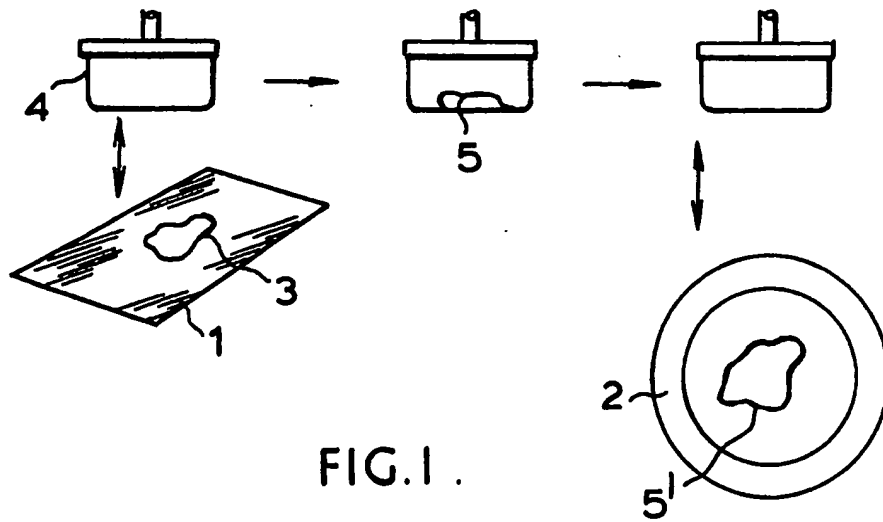


FIG. 1.

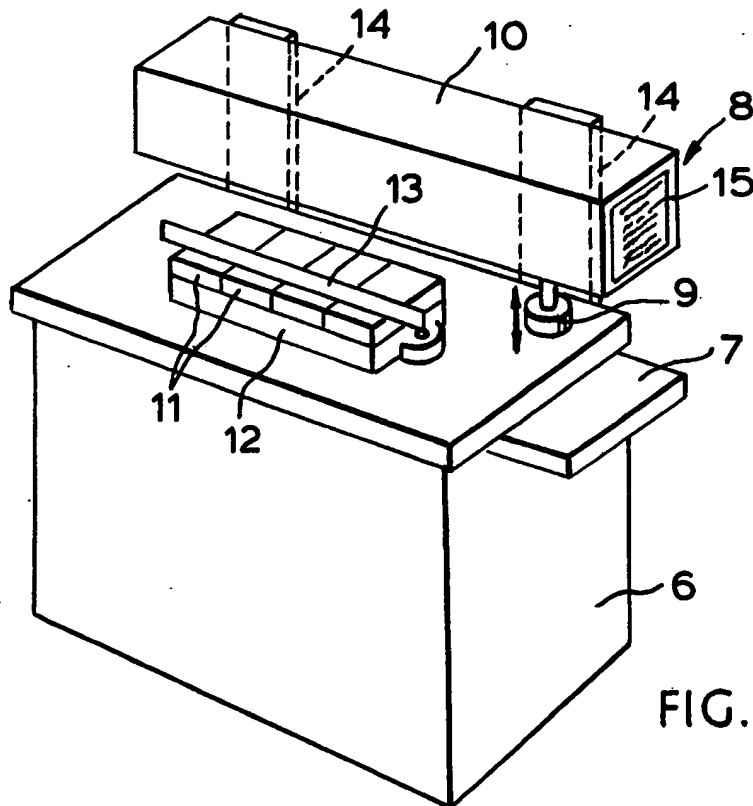


FIG. 2.

SPECIFICATION

Printing machine

5 The present invention relates to printing machines of the type in which ink is transferred from a printing plate or cliché to an article to be printed by a deformable tamp, generally made of silicone rubber. The deformability of the tamp allows printing onto
10 non-planar surfaces such as dinner plates, bottles, etc.

In such machines, an image to be printed is engraved or etched on a printing plate or cliché. The cliché is then inked and wiped to leave ink only in the
15 etched grooves. A silicone rubber tamp is pressed onto the cliché to lift the ink from the grooves and is then pressed onto the article to leave a printed image on the article. A variety of tamp shapes are employed to suit the shape and size of the article and
20 the size of the image to be printed.

Where it is desired to print a variety of colours, a tamp and a cliché is used to print each colour. The tamps and clichés are arranged in a row and articles are passed down the row to be printed with each
25 colour in turn. This requires an extremely accurately indexing system for moving the article into position at each colour printing station.

One object of the present invention is to provide a multicolour or multiple image printing machine
30 wherein the article is located at one position during printing.

One aspect of the invention provides a printing machine comprising a tamp and a plurality of images on a cliché or clichés, means for moving the
35 tamp to select and take an image from the or a cliché, and means for touching the tamp against an article to deposit the image on the article.

A single cliché may be employed, bearing a plurality of images to be selected from.

40 Other features of the invention will be apparent from the following description of the invention by way of example with reference to the accompanying drawings, in which:

Figure 1 illustrates a printing process;

45 *Figure 2* illustrates a machine embodying features of the invention.

In *Figure 1*, a cliché 1 has an image etched on it to a depth of say 0.2 thousandths of an inch. To print the image on plate 2, ink is first scooped onto the
50 plate and the plate then wiped with a blade (not shown) to remove ink from the top surface of the cliché to leave ink in the etched groove 3 forming the image. Tamp 4 of silicone rubber is pressed onto the cliché 1 and lifts off the ink image 5. The tamp 4 is
55 then moved to above plate 2 and then pressed on the plate where it leaves the image 5'.

In *Figure 2* a machine 8 embodying features of the invention has a stand 6. A printing table 7 is mounted at the front of the machine. The table 7 will
60 be provided with a nest (not shown) for receiving an article to be printed. The nest may be dedicated to a single type of article, or preferably adapted to be adjusted to receive a wide range of articles. The nest locates successively deposited articles in identical
65 positions. Tamp 9 depends from control box 10,

which is supported on legs 14, and is mounted to be movable along two axes, vertically and fore to aft of the machine.

A bed 11 holds a plurality of clichés 12. The bed is mounted to be moved sideways of the machine. A blade 13 wipes across the top face of the clichés as the bed is moved sideways. Means (not shown) are provided to put ink onto the top face of the clichés.

Tamp 9 may be driven vertically electromagnetically, and fore to aft by a lead screw.

To operate the machine the bed 12 is moved to one side where ink is scooped onto the clichés, the bed is then moved to pass the clichés under the blade 13 to wipe off excess ink and position the
80 clichés under the fore to aft path of the tamp 9. Tamp 9 is then driven into position above a selected image or cliché, and then pressed down onto the cliché to lift an ink image therefrom. The tamp is then raised and driven to the front of the machine to a station
85 above the printing table 7, where it is pressed down onto the article to be printed on. It is preferred that the station be a constant position, and that the nest on table 7 be adjustable to locate the article for printing in the desired place. After printing the first
90 image the tamp may then be returned to a position above another cliché to take a second different image for printing on the article. Where it is desired to print a multicolour image on an article a series of clichés will be employed each bearing an image for a
95 respective colour and each cliché will be coated with the appropriate colour ink. The tamp then travels between the article and each cliché in turn.

It is anticipated a single tamp may be used to print the different colours. However, where there is difficulty in transferring all of an ink image onto an article
100 it may be found desirable to mount two or more tamps in tandem on the control box moving them in unison.

The machine is also able to print from a selection of images, which need not be in different colours. This may be of use when printing data codes or other variable information. The clichés will carry a range of information and the tamp moved to a selected position to pick the desired information to print it on an article. It can be seen that a single cliché
110 may be employed, carrying a plurality of images, and that a single colour ink may be used to ink the whole cliché or plurality of clichés.

It is envisaged that the machine will be particularly useful for printing on a small number of articles, in a range of designs from those requiring a single image in one colour to a selection of images in multiple colours.

The printing table 7 may carry a simple indexing mechanism. For example a rotating table so that a second article may be placed in a nest while a first article is being printed. Also a jig may be provided for turning an article over, for printing on more than one side of the article.

125 Movement of the tamp will be controlled precisely by a programmable microprocessor. Fine adjustment will be provided to allow setting up of the machine and a memory facility to store printing programmes for recall. Sideways adjustment of the
130 tamp relative to the cliché(s) may be provided,

preferably by controlling the sideways movement of bed 12. A control board 15 may be provided on the control box 10. Which houses drive for the tamp and a microprocessor.

5

CLAIMS (Filed on 26 July 1983)

1. A printing machine comprising a tamp and a plurality of images on a cliché or clichés, means for
10 inking one or more images to form an ink image and means for moving the tamp to select and take an ink image from the or cliché and to touch the tamp against an article to deposit the ink image there-
upon.
- 15 2. A machine as claimed in claim 1, wherein a plurality of clichés is provided, each cliché bearing one or more images.
3. A machine as claimed in claim 1 or 2, wherein the inking means is adapted to ink each cliché or
20 image independently.
4. A machine as claimed in claims 1, 2 or 3, wherein a plurality of inking means is provided to enable multicolour printing.
5. A printing machine, substantially as hereinbe-
25 fore described with reference to the accompanying drawings.

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